



## National Transportation Safety Board

Office of Marine Safety  
Washington, DC 20594

# Marine Accident Factual Report of the Investigation

### -- Operations Issues<sup>1</sup> --

*Engine Control Room Distribution Switch Board Fire on board M/V Columbia,  
West of Admiralty Islands, Chatham Strait, North Passage Point,  
Approximately 30 miles SSW of Juneau, Alaska,  
on June 6, 2000, about 1207 hours.*

NTSB Case Ref.: DCA 00 MM 030

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Investigator In Charge

Date

8/24/01

<sup>1</sup> This report exclusively addresses Operational issues of this investigation. Additional information is provided in the Factual Reports as compiled by other investigative committees in this investigation.

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## A. Accident Reference Information

NTSB Case Reference: DCA 00 MM 030 – *MV Columbia*  
Location: west of Admiralty Islands, Chatham Strait, North Passage Point,  
Approximately 30 miles SSW of Juneau, Allaska,  
Date / Time of Incident: June 6, 2000 / about 1207ASDT

## B. Operations -- Group Participants

- |   |   |
|---|---|
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| Captain George M. Brereton<br>Master of <i>M/V Columbia</i>   | <u>Alaska Marine Highway System</u><br>Phone: 907-465-3955<br>Cell: 907-321-1259  |

## C. Synopsis

Shortly after noon on June 6, 2000, a fire broke out on the main electrical distribution switchboard located in the engine control room aboard the Alaska Marine Highway System (AMHS) ferry *Columbia*. At the time, the ferry was underway proceeding south in Chatham Strait on a regularly scheduled voyage from Juneau to Stika with 434 passengers and 63 crew about 30 nmi southwest of Juneau, Alaska. As a result of the fire, the vessel lost main propulsion and electrical power throughout the ship. The U.S. Coast Guard Cutter *Anacapa* was operating nearby and responded to the emergency sending a fire fighting team to the *Columbia*. Additional resources from Sitka Fire Department, Coast Guard MSO Juneau, and State of Alaska Fire Training also responded to the emergency. By about 1425, the fire was extinguished with no resulting injuries or deaths. However, the *Columbia* was dead in the water and was required to be towed to port.

Another AMHS ferry, the *M/V Taku*, rendezvoused with the drifting *Columbia* and took on board *Columbia's* passengers without incident or injury. At about 2030, *Taku* arrived at Auke Bay Ferry Terminal in Juneau where the passengers were safely disembarked. Although there were no injuries as a result of this fire, three individuals were taken to Bartlett Regional Hospital for treatment of conditions not related to the accident.

## D. Details of the Investigation

The investigative team consists of an IIC, an operational specialist, a marine engineer, a fire science specialist, and a human performance specialist, a survival factors specialist and a family affairs specialist. Also present was a public affairs specialist and an observer from the Office of General Counsel. The on-scene investigation was conducted from June 8 through 20, 2000. No Board member participated in the on-scene phase of this investigation. Also assisting the Board with the investigation under contract was a technical specialist from Johns Hopkins University Applied Physics Laboratory and fire investigators from the State of Alaska and US Treasury ATF.

The investigative team has completed the on site investigation, collected documentary evidence and has interviewed over 30 witnesses in Juneau and Ketchikan, Alaska. These witnesses included the officers / crew of the *M/V Columbia*, *M/V Taku* and *USCG Cutter Anacapa*, also management of Alaska Marine Highway System and Alaska Ship and Drydock.

This accident is being investigated under NTSB rules. The assisting parties are the U.S. Coast Guard, State of Alaska - Department of Transportation and Facilities (Alaska Marine Highway System), State of Alaska - Department of Public Safety (Division of Fire Prevention), and Alaska Ship and Drydock.

The major issues in this accident are maintenance and operation of main and auxiliary switchboard aboard *M/V Columbia* and crew response and passenger safety.

## E. Operations – Facts of the Investigation

### 1. Vessel Information

#### 1.1 Description Summary

Name of Vessel	<i>M/V Columbia</i>
Port of Registry	Juneau, Alaska
Nationality	USA
Service	Passenger Car Ferry
Operating Route	Bellingham, Washington to Ketchikan, Wrangell, Petersburg, Juneau, Sitka, Haines and Skagway, Alaska
IRCS (call sign)	WYR2092
VIN	D557340
IMO Number	7320095
Owner	State of Alaska, DOT, Alaska Marine Highway System
Operator	State of Alaska, DOT, Alaska Marine Highway System
Year Built	1974
Builder	Lockheed Shipbuilding, Seattle, Washington
Hull Identification Number	142
Main Propulsion system	DELAVAL ENTERPRISE DMRV 16-4 6170 H.P. @ 409 R.P.M.
Engine	12,340 H. P.
Propeller	Variable Pitch
Bow Thruster	1750 H. P. @ 1800 R.P.M.
Stern Thruster	None
Emergency Diesel Generator	DEUTZ BF 12L413F 250 KW @ 1200 R.P.M.
Length Overall	418 feet
LBP (Length between perpendiculars)	379.6 feet
Beam (maximum)	85.1 feet
Depth (molded)	24.0 feet
Gross tonnage	3946
Net tonnage	2683
Displacement	7773.5
Draft (summer)	17' 7 1/4"
Draft (lightship)	13' 6 1/2"
International Tonnage Convention	13,009

Gross Tons	
Fuel Oil Capacity	290,000 gallons
Lube Oil Capacity	3,400 gallons
Fuel Oil Consumption	58,000 gallons per week
Lube Oil Consumption	350 gallons per week
Classification Society	American Bureau of Shipping
Classification Society No.	No:7408017 Official Number: , Hull Classification: +1 Ferry , Machinery Classification: +AMS
Crew Size	62
Service Speed	17.3 knots
Passenger Capacity per USCG COI	527
Passenger Capacity during the summer period May 15 thur October 15	931
Crew Capacity	69
Berth Capacity	312
Passenger State Rooms	91

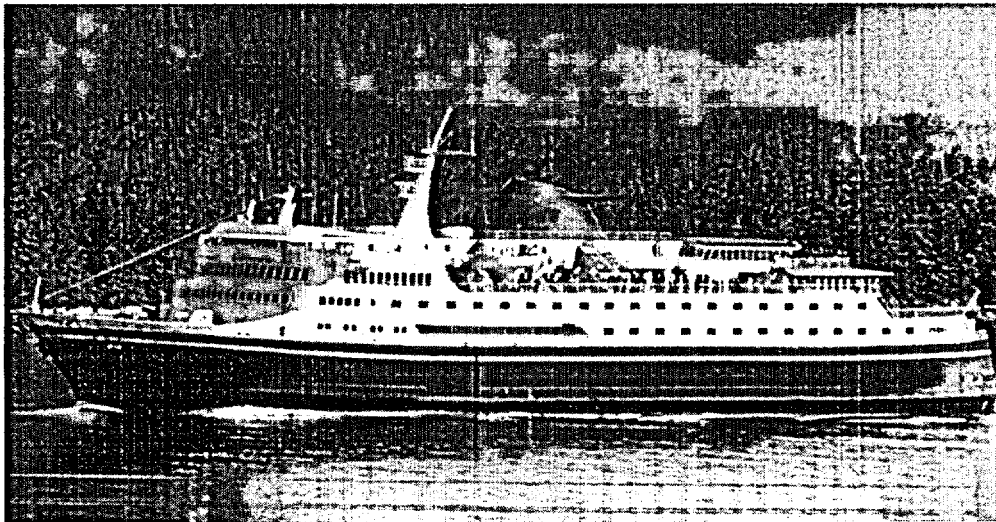


Figure 1 M/V Columbia underway

## 1.2. Certification and Inspections

See *M/V Columbia*, Engineering Factual Report.

## 1.3. Classification Surveys

See *M/V Columbia*, Engineering Factual Report.

#### 1.4. U.S. Coast Guard Examinations

A USCG Temporary Certificate of Inspection was issued to the *M/V Columbia* on 22 May 2000 upon departing Alaska Ship & Drydock, Ketchikan, Alaska. The certificate contained no major deficiencies (CG-835's). For additional information see *M/V Columbia*, Engineering Factual Report.

#### 1.5. Documentation of Pilothouse

Pilothouse was of modern design for date of construction with open bridge wings. Fitted with: a centerline steering station; bridge wing engine & steering controls; gyro compass with autopilot; engine throttle controls (VPP); bow thruster controls; two ARPA radars; VHF and MF/HF SSB radio units (sitor); cellular telephones; navigation suite with GPS, loran, and electronic & paper charting; control panels WTD's, FSD's, ventilation, fire / smoke detection;

### 2. Chronology of Events (Voyage)

#### 2.1 *MV Columbia* – Operations Time Line

Vessel's Intended Voyage: Juneau, Alaska (Auke Bay Terminal) to Sitka, Ak  
Ship's Position: Chatham Strait, North Passage Point 30 miles SSW of Juneau, Alaska  
Ship's Speed: 19.4 Knots

	Tuesday June 6, 2000
0915	Vessel departs Auke Bay
1207	Master recognizes problem with ship's power; Lights begin to flicker in Chief Mate's room. Master and Chief Mate immediately go to bridge. Master takes Command on bridge. Alarms (telegraph alarm & others) going off on bridge. Lost Power to GPS, PA system, radar, lights, ship. Mate on watch reports fire in Engine Control Booth. Master orders General Alarm sounded. Emergency Generator comes "on." Steering maintained by Emergency Generator. Port Steering Pump "on." Helmsmen reports he has steering control of ship. Helmsmen ordered to put rudder amidships. Master observes starboard engine going astern pitch, rpm's reducing on both engines. Master orders engines stop.
1208	Lights "on" PA system "on." Master & Pilot silencing alarms. Chief Mate makes announcement on PA system to passengers and states this is not a drill, passengers muster at the upper decks, emergency squad muster at e - squad locker, there is a fire reported in the engine room.

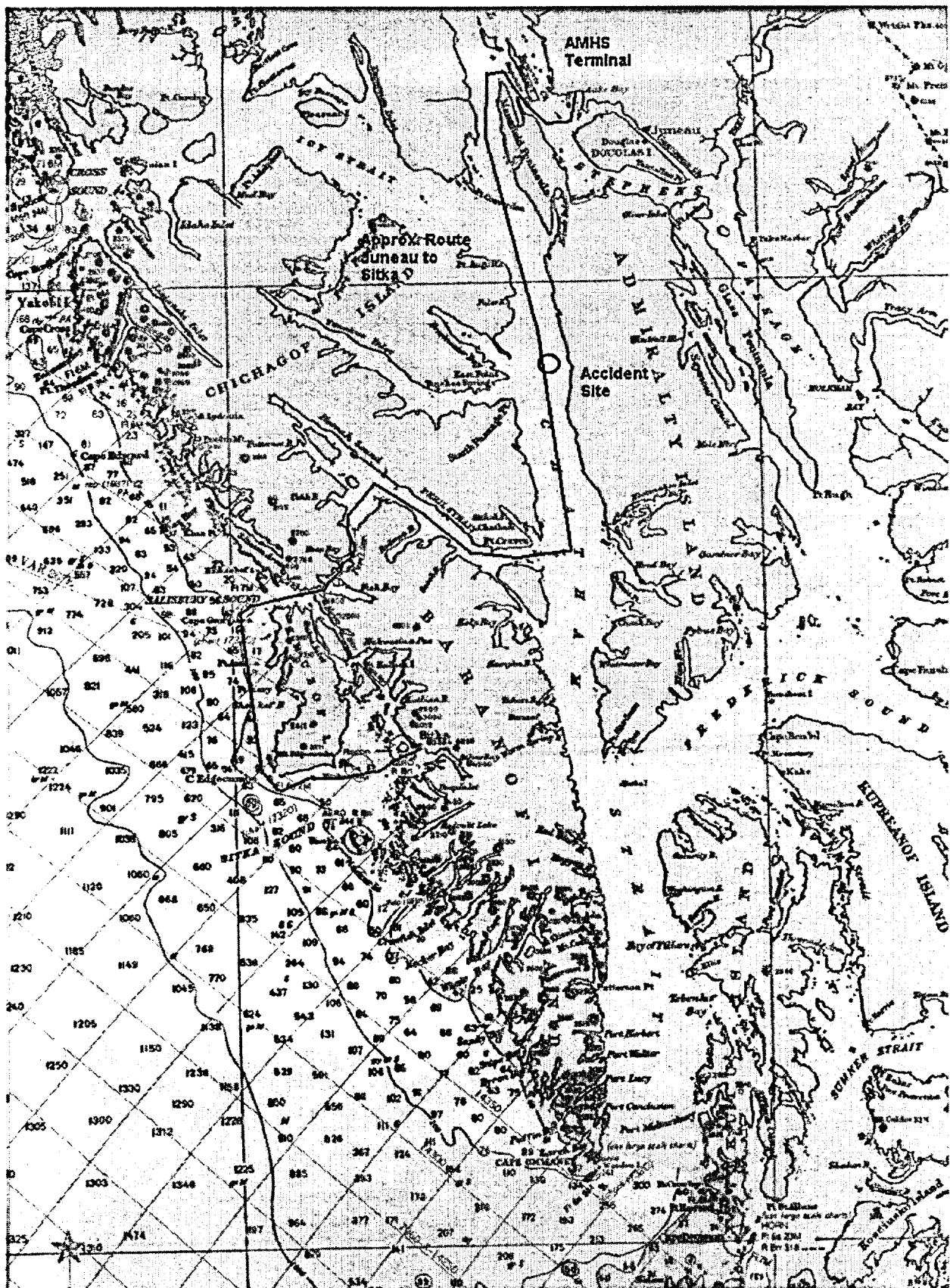
	Chief Mate departs bridge to muster with emergency squad. Pilot remains on bridge with Master. Alarms reactivated. Master reactivates power to emergency PA talk-back system. Passengers mustering at upper decks. Lower decks being searched and swept for passengers.
1220	Fire reported extinguished. Attempting to restart navigational bridge equipment. Vessel dead-in-water (DIW).
1222	Chief Steward reports to bridge, Passenger muster completed.
1224	Ship's position in Chatham Strait: Lat.: 57° 51.3' N; Lo.:134° 49.3 W; Visib.: 1.5 mn
1225	Chief Mate receives permission from Master to ventilate ship. Aft tie-up door opened. Smoke observed coming from fidley deck
1227	Chief Engineer, first assistant engineer, day third engineer, reported out of engine room.
1230	Additional fire extinguishers delivered to engine room.
1231	Continue ventilating. Open vehicle door to ventilate car deck. Ventilate by opening after tie-up station doors and forward car deck.
1240	Fire re-flash reported to Master. Master orders all fire screen doors closed, secure all ventilation dampers and all fuel to main and auxiliary engines secured by remote controls Watertight Door (WTD)#3 remains open to permit fire fighting team to access engine control room from auxiliary engine room with CO2 hose from 100 pound bottle located in auxiliary engine room. Ship's personnel pull out of engine room space and prepare for re-entry with assistance from 4-man fire fighting team from USCG cutter <i>Anacapa</i> . <i>M/V Taku</i> standing by to assist. <i>M/V Taku's</i> chief mate and bosun deliver additional SCBA air bottles and SCBA packs to <i>M/V Columbia</i> by way of <i>M/V Taku's</i> rescue boat.
1245	Master of <i>M/V Columbia</i> refers to ISM Checklist. Additional fire extinguishers delivered to engine room.
1305	Vessel's position in North Passage:Lat.57° 51.0' N; Lo.:134° 48.4 W; All Passengers outfitted with lifejackets. Radio communications being maintained by VHF radios. Stewards mustering passengers at lifeboat stations.
1326	Master of <i>M/V Columbia</i> notifies <i>M/V Taku</i> to prepare for receiving passengers from <i>M/V Columbia</i>
1329	Crew assembles material for the construction of an improvised gangway for the transferring of passengers. Oiler taken to after tie-up docking station for smoke inhalation and administered oxygen by purser.



1351	<i>M/V Taku</i> positioning alongside M/V Columbia's port side
1401	<i>M/V Taku</i> secure alongside with one bow & one breast line.
1405	Stewards posted at stairwells and doorways to facilitate crowd control and coordinate passenger transfer
1410	Gangway constructed of aluminum staging and 4' x 8' plywood planking in position between vessels' car ports. Additional mooring line passed between vessels at car port deck.
1419	Passenger evacuation transfer commences. Approximately 18 passengers escorted to their vehicles to retrieve pets, and medications. At request of Chief Engineer, emergency generator is shut down to ensure deactivated electrical circuits for the safety of the firefighting team. Vessel on emergency battery supply
1425	Chief Engineer reports fire extinguished
1428	First Engineer suiting up in fire fighting gear to re-enter engine room.
1445	Emergency Generator restarted.
1451	Commence cool down of car deck above engine control room with water from vessel's fire hoses
1508	Weather observation: Wind SE 8 knots, Light Rain
1523	Passenger transfer completed (435 pax & 6 crew members)
1530	Continue sweep searching of all decks for passengers and crew
1532	Passing <i>M/V Columbia's</i> 2 bow mooring lines to <i>M/V Taku</i>
1534	Reconfirm all passengers transferred to <i>M/V Taku</i> . Let go <i>M/V Taku</i> to reposition from alongside to forward of the <i>M/V Columbia's</i> bow for towing <i>M/V Columbia</i> to center of Chatham Strait.
1539	Port & Starboard car port doors close and secure
1607	<i>M/V Taku</i> lets go <i>M/V Columbia's</i> bow tow lines. <i>M/V Taku</i> begins medical evacuation of one male passenger to Juneau's Bartlett Regional Hospital via Coast Guard helicopter
1608	<i>M/V Columbia's</i> medical supplies transferred to <i>M/V Taku</i> by way of rescue boat
1616	Nonessential crew members released from emergency stations

1618	Boarding: Dave Reichl ((AMHS), Gaylen Brevik (Alaska Fire Specialist), Lt. Eric Bauer (USCG) and Troy Dixon (USCG).
1622	USCG Cutter <i>Anacapa</i> standing by. Cutter's crew members board <i>M/V Columbia</i> to assist
1632	<i>Tug Banner</i> (800 hp) and <i>Tug Ardie</i> (<800 hp) arrive on-scene & <i>Banner</i> takes <i>Columbia</i> in tow.
1745	Abeam False Bay ← port side
2040	Abeam Hanus Reef Light ← port side 1.8 nm. Wx obsvr: Wind WSW at 12 knots, rain, 48°F Bar. 29.99
2355	False point retreat abeam at 1 nm. Engine room reported secure.
	Wednesday June 7, 2000
0015	<i>Tug Banner</i> slows to take up slack of tow line
0055	<i>Tug Chahoenta</i> arrives on-scene to relieve <i>Tug Ardie</i>
0552	<i>M/V Columbia</i> receives tow line from <i>Tug Chahoenta</i> on stern
0845	<i>M/V Columbia</i> all fast stbd side to Alaska Marine Highway System Auke Bay Terminal. Release tugs <i>Banner</i> & <i>Chahoenta</i>
0900	USCG and Alaska Marine Highway System personnel board
	Thursday June 8, 2000
1000	NTSB holds organization meeting on scene with parties

## 2.2 Chartlet with AMHS Route Juneau to Sitka and accident site.

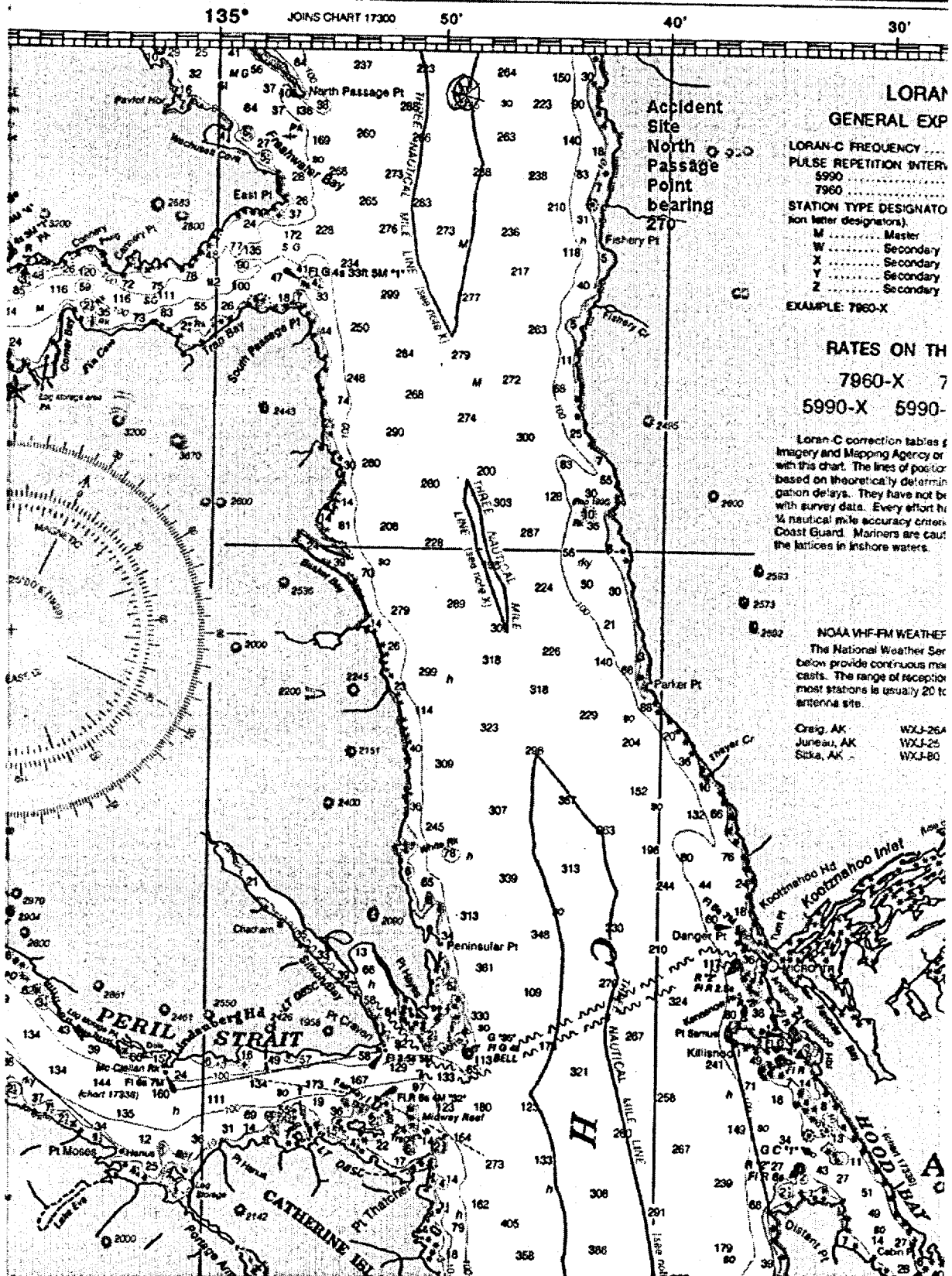


### **2.3 *MV Columbia* – Operations Summary of Events**

On Tuesday, June 6, 2000 at 0915 (ADT), the 418 foot State of Alaska Ferry, M/V Columbia, one of a fleet of nine vessels making up the Alaska Marine Highway System, departed the Auke Bay Terminal north of Juneau, enroute to Sitka, Alaska, a scheduled voyage of about 8 ½ hours. The *M/V Columbia*, built in 1974 at a cost of \$22 million, is considered to be the flagship of the ferry fleet. The vessel is capability of carrying 931 passengers and 134 vehicles during the short exclusive summer operating season. The vessel is laid-up and not operated during the majority of the year when the tourist season wanes and the onset of early winter weather approaches the Alaskan Maritimes. The vessel's overnight accommodations for passengers are limited to 91 Spartan staterooms with no frilly amenities. With a horsepower of 12,350, the vessel's two main diesel engines consume 450 gallons of fuel oil per hour and draws about 18 feet.

Just after noontime at approximately 1207, fire broke out in the vessel's engine control room, knocking out power to the ship's electrical systems and causing the emergency generator to come on-line. While determining the source of the fire as originating in the main electrical distribution switchboard, the cause of the fire is still under investigation.

At the time the fire broke out, the vessel was traveling south through the Chatham Strait, just west of Admiralty Island and bearing east of North Passage Point at a speed of 19.4 knots. The vessel's compliment consisted of 63 crewmembers while carrying 435 passengers and a number of vehicles and vans.



The vessel's master immediately went to the wheelhouse and assumed command. He ordered the helmsmen to set the ship's rudder amidships. He then directed the senior officer of the watch to stop the ship's engines, sound the general alarm and makes an announcement on the public address system advising all persons onboard that the ship was experiencing a fire. The chief mate reiterated that this was not a drill and all onboard should muster at their emergency stations. Earlier that morning the ferry *M/V Taku* was seen in passing. The master of the *M/V Columbia* radioed the *M/V Taku* on VHF channel #16 and Channel # 11 to standby for assistance. The VHF marine radio call was overheard by the Coast Guard Cutter *Anacapa* as she was underway and on patrol within the area. Meanwhile, two tugboats of about 800 horsepower from a nearby logging camp, the *Banner* and the *Ardie*, answered the call to offer assistance.

Back onboard the *M/V Columbia*, the chief mate mustered with the emergency fire fighting team to assist the engineers who were actively attacking the ensuing fire with hand-held portable CO2 fire extinguishers while donning self contained breathing apparatus (SCBA). Extinguishing the fire also utilized the use of the 100 pound installed CO2 fire extinguisher located in the adjacent auxiliary generator engine room with its length of reeled hose passing through water tight door #3 and reachable to the engine control room. One crewmember, an oiler, experienced smoke inhalation and was taken to the vessel's stern to get fresh air.

In the mean time, the *M/V Taku's* rescue boat, crewed by that vessel's chief mate and bosun, delivered additional fire fighting equipment to the *M/V Columbia* while the USCG Cutter *Anacapa* delivered four of its crew to assist in fighting the fire.

At about 1400, the master of the *M/V Taku* positioned his vessel alongside the *M/V Columbia's* port side and received all of that vessel's passengers after rigging an improvised gangway made of aluminum staging and 4'x8' plywood sheets between the two vessels' side car ports approximately 8 feet above the water's surface. As the lifejacket clad passengers transferred from one ferry to another, the *M/V Taku's* rescue boat stood by in the event a passenger inadvertently entered the water. The ship's personnel continued to make searching sweeps of all decks and cabins, looking for any passengers not accounted for. At 1425 the *M/V Columbia's* chief engineer reported the fire extinguished.

After completing the transfer of the passengers at 1532, the two vessels separated and the *M/V Taku* took the *M/V Columbia* under tow so as to safely distance *Columbia* from the shoreline of Admiralty Island. The *M/V Taku* then lets go of the *M/V Columbia* and evacuates a transferred passenger experiencing chest pains to an awaiting USCG helicopter. A 63-year-old male passenger was evacuated by air and flown directly to Juneau's Bartlett Regional Hospital where he was diagnosed as suffering from angina. Other than the oiler of the *M/V Columbia's* crew and the one evacuated passenger, no other injuries were reported. The *M/V Taku* departed scene at 1640 with 435 passengers & 1 stowaway, and 6 crewmembers from the *M/V Columbia*, 2 CG medical corpsmen from the *USCGC Anacapa*, in addition to its own 81 passengers.

At about 1630, the tug *Banner*, from a local logging camp, takes the *M/V Columbia* under tow back to Auke Bay Terminal with the logging company tug *Ardie* and *USCG Cutter Anacapa* escorting. Early the next morning the tug *Chahoenta* arrives on-scene to relieve escort tug *Ardie* and assist in docking

the *M/V Columbia*. On Wednesday morning, June 7, at 0845, the *M/V Columbia* is all fast starboard side to Alaska Marine Highway.

### 3. Waterway Information<sup>2</sup>

The *M/V Columbia*'s normal route to Sitka, departs AMHS Terminal at Auke Bay, northwest of Juneau, and proceeds through Stephen's Passage, Saginaw Channel, then south following Chatham Strait to Peril Strait, then through Neva Strait, Olga Strait and Sitka Sound to AMHS Sitka Terminal. The trip normally takes 8.5 hours from Auke Bay Terminal to Sitka. The accident occurred less than three hours into the trip abeam North Passage Point in Chatham Strait. Chatham Strait is the most extensive of the inland passages of southeastern Alaska. It has a length of 138 nautical miles<sup>3</sup> from Coronation Island in the south to Rocky Island in the north. The main strait is clear, open, and deep throughout. The width of the strait at the accident scene is approximately 8 nautical miles.

The conditions at North Passage Point on June 6, 2000: at 1200 AKDT:

Tidal heights: approx 0.0 feet

Tidal currents: approx 1.0 knots with a east southeast set.

### 4. Operational Information

The *M/V Columbia*'s USCG Certificate of Inspection states that 'route permitted and condition of operation' is Lakes, Bays, and Sounds: the sheltered waters of the west coast of North America as defined in 46 CFR 42.03-35, not on an International Voyage. Being certified for the domestic coastwise trade and as such the vessel is exempt from the International Convention for Safety of Life at Sea, 1974 and its Protocol of 1978 (SOLAS), the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended in 1995 (STCW) and the International Safety Management (ISM) Code.

The *M/V Columbia*'s officer and crew complement consists of: Master, Chief Mate, Second Mate, Third Mate, Pilot, 6 ABS, 3 OS, 2 watchmen, Chief Engineer, 1AE, 2AE, 3 - 3AE, 2 Jr. Engineers, 2 Oilers, 3 Pursers and 33 Steward Department members for a total crew of 66.

### 5. Management Information

The *M/V Columbia* is part of the nine ship fleet of Alaska Marine Highway System, a unit of the Department of Transportation & Public Facilities of the State of Alaska. Ferry service in Southeast Alaska began in 1949 by a private operator and in 1957 the Territorial Board of Commissioners took over operation. Seven of the nine vessels operate in Southeast Alaska and the remaining two operate in Southwest Alaska and the Aleutian Chain. Only one vessel is certified to operate in ocean service meeting all international requirements, which provides cross-gulf service between Juneau and Valdez.

<sup>2</sup> Waterway information obtained from United States Coast Pilot 8, 1999 (23<sup>rd</sup>) Edition

<sup>3</sup> Nautical miles equals 1.151 statute miles / 6076.12 feet / 1852.0 meters

## 6. Meteorological Information<sup>4</sup>

The wind generally draws through Chatham Strait parallel to its axis (north / south). At the time of the accident the on scene weather observed was: winds - light breeze; seas - 1 foot; visibility - 0.5 nautical mile on fog and light rain. Nearby weather observations at ASOS Juneau, Alaska for June 6, 2000 at 1238 hours: winds - 080 degrees @ 5-6 knots; visibility - 1 ¾ statute miles. At 1245 the *M/V Taku* on scene, observed weather: winds light southeast @ less than 5 knots, calm seas, cloudy sky and approximately 10 nautical mile visibility.

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<sup>4</sup> Meteorological information obtained from United States Coast Pilot 8, 1999 (23<sup>rd</sup>) Edition and United States Weather Service